

## Review of *Acacia retinodes* and closely related species, *A. uncifolia* and *A. provincialis* (Leguminosae: Mimosoideae: sect. Phyllodineae)

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### Abstract

Since the description of *Acacia retinodes* Schltld. in 1847, there has been confusion about its identity. Extensive fieldwork has been conducted on this species and related taxa, material and literature examined, and the taxa delimited. Three species are recognised here which previous authors have confounded with varying interpretations under *A. retinodes* Schltld., and they are described, illustrated and discussed in full. *Acacia retinodes* Schltld. is now considered to be endemic to the Mt Lofty Ranges of South Australia. *Acacia provincialis* A.Camus, which is here lectotypified, has a discontinuous distribution in south-eastern Australia from the Mt Lofty Ranges and Kangaroo Island, South Australia, the Grampians and Glenelg River to near Melbourne, Victoria; it has become naturalised in Southern Europe and North America. *Acacia uncifolia* O'Leary is raised for the first time to species level; treated previously as a variety of *A. retinodes* Schltld., it has a disjunct distribution in coastal areas from Kangaroo Island and southern Fleurieu Peninsula in South Australia, King and Flinders Islands in Bass Strait and from Torquay to Wilsons Promontory in Victoria.

### Introduction

This paper presents morphological and habitat characters that warrant the recognition of *A. retinodes*, *A. uncifolia* and *A. provincialis* as distinct and separate species, these three species having hitherto been confounded under *A. retinodes*.

### Taxonomic history

*Acacia retinodes* was published by Schlechtendal in *Linnaea* in 1847, based on material collected in January 1845 by Dr Herman Behr, likely to be from the Barossa Valley, South Australia. The holotype and isotype are flowering branches with linear phyllodes, representing the phyllode shape found on mature trees. Pods were not described in the protologue. From the field notes provided by Behr, Schlechtendal recorded that the species occurred in "rich soils near water in the valleys".

During his four-year stay from late 1847 in South Australia (Willis 1949) Mueller made several collections that he identified as *A. retinodes* (see later), but many of these were from slightly wetter habitats with different species associations than those found at the type locality. The "rich soils near water in the valleys" that occur south of the Barossa Valley near Adelaide are a habitat for what, in this paper, is recognised as *A. provincialis*, a species closely related to *A. retinodes* but which does not occur in the Barossa Valley. While *A. retinodes* can occur in rich soils near water, it also extends to relatively

dry plains and hillsides, a habitat that does not support *A. provincialis*.

The first collections of *A. uncifolia* appear to have been made by Robert Brown from Port Phillip in 1802, although it is likely that this coastal species was also encountered on Kangaroo Island. Bentham included this collection in his account of *A. retinodes* in 1864, but it was only in 1932 that Black recognised this taxon as a variety of *A. retinodes*.

Judging from information on herbarium labels, Mueller appears to have distinguished between the two taxa (*A. provincialis* and *A. retinodes*) he collected from near Adelaide. His National Herbarium of Victoria specimen *Mueller MEL2082743* has labels from three localities, Onkaparinga River, Morialta Gully and Brown Hill Creek, accompanied by specimens of *A. provincialis*. Details from these labels indicate that Mueller was questioning the identity of the plants he had collected as *A. retinodes*. On his Brown Hill Creek and Onkaparinga River labels Mueller provided the distinguishing characters of *A. provincialis*; namely, restricted damp riverbank habitats, slender growth form, golden-yellow flowers with a long flowering period and a character which is very obvious in the field, "Truncus laevis! Nei rugosus ut *A. retinodes*!" (its smooth trunk, not rough like *A. retinodes*!).

Bentham saw the Onkaparinga River and Brown Hill Creek specimens (which represent *A. provincialis*) on *Mueller MEL2082743*, together with a specimen of *A. retinodes* from the Torrens River, (mixed with

*A. provincialis*) on Mueller MEL2082778. However, Mueller's apparent distinction between the two species appears not to have been recognised by Bentham. It also appears that Mueller and Bentham were confounded by the phyllode variation on some of the other specimens of these and other related taxa that they saw. Habitat, habit, flowering period and bark are characters that most obviously separate these two species in the field. However, these and other closely related species can be confused on herbarium specimens because of similar phyllodes, inflorescences and pods.

In 1855 Mueller (now residing in Melbourne) included Victoria in the distribution for *A. retinodes* (Bentham 1855), and in 1858 he provided a description of pods and seeds. However, it is now known that the pod and seed description refers to *A. provincialis*, while the information for the distribution in Victoria relates to both *A. provincialis* and *A. uncifolia*, not *A. retinodes*. His data was published in Mueller (1859).

The *Flora Australiensis* account of *A. retinodes* by Bentham (1864) contains elements of *A. retinodes* and *A. provincialis*, as well as *A. uncifolia* and other species, namely, *A. alcockii* ("Memory Cove, R. Brown"), and probably *A. rivalis* ("Flinders Range, Mueller"). The collections from Kangaroo Island by Waterhouse relate to *A. provincialis* and *A. uncifolia*, the collection from Port Phillip (R. Brown) relates to *A. uncifolia*, while the Victorian collections from "grassy ridges and open valleys throughout the greater part of the colony" (Mueller) relate to *A. provincialis*. Behr's original observation of "very frequent in rich soils near water in the valleys" was also included, and represents both *A. retinodes* and *A. provincialis*.

Confusion over the identity of *A. retinodes* continued for many years. Mueller's (1887) illustration of *A. retinodes* is of *A. provincialis*. Collections from South Australia, where all three taxa exist, tended to be placed under the name *A. retinodes*, but often have questioning field comments. In 1882, Tepper (AD96920224) mounted several specimens on a single sheet, where *A. provincialis* is named as *A. retinodes*, and *A. retinodes* is annotated as *Acacia var? sp?*. Another Tepper collection (MEL2082736) (of *A. retinodes*) notes; "This *Acacia* is quite different in habit from *A. retinodes*, as in some localities it ascends dry rocky hills, while the other is restricted to moist localities and creeks etc." Collections of *A. retinodes* by Black note "Narrow-leaved form of *A. retinodes*" (Black AD9672804), and "grows on the dry hillsides & drifts downwards: bark very dark & rough on trunk, taller than *retinodes*, 20-25 feet sometimes, flowers xmas till beginning Feb.!" (Black AD96728025). Numerous other collections record the distinct habitats of the three taxa, "near water", "away from water", "dry hillsides" and "coastal dunes".

In 1932 Black published *A. retinodes* (as *rhetinodes*) var. *uncifolia*, from near Waitpinga Beach, with a concise habitat description of "growing in sand and limestone, away from water". The accompanying observation that "The small phyllodes, terminating in a curved, almost hooked

micro, give this variety a very different appearance from the type, which is usually found in gullies or near creeks", seems in part a legacy from the misapplication of the name, as it appears that Black considered the *A. provincialis* taxon to represent *A. retinodes*. Earlier collections of the coastal taxon with narrow phyllodes, were often either identified as *A. retinodes*, "*Acacia* sp.", or had accompanying field notes of "small form of *A. gillii*" (Cleland AD96546076), "away from water" (Cleland AD96728029), "near *A. retinodes*" (White AD96728027).

In describing *A. provincialis* Camus (1927) thought it represented a hybrid between *A. retinodes* and *A. saligna*. However, he was describing for the first time the taxon from near Adelaide that Mueller had noted some 80 years earlier as having a long flowering period and smooth trunk. What Camus presumed to be the *A. retinodes* parent was also *A. provincialis*. This species had been in cultivation in the south of France since the 1870s, and was popular in the cut flower trade as noted by Vilmorin (1894), Anon. (1919), and Stapf & Ballard (1929).

*Acacia retinodes* and *A. provincialis* have remained confounded to recent times. For example, Whibley (1980) includes a photograph and illustrations representing these two species and *A. uncifolia*. He did consider however that these three taxa required further study (Whibley pers. comm.). Later Whibley & Symon (1992) and Maslin (2001a, b) identified the three taxa but did not afford them species status. Recent publications have referred to *A. provincialis* informally as *A. retinodes* Schltld. var. *retinodes* "Swamp Wattle" in Maslin (2001b), *A. retinodes* Schltld. var. *retinodes* "swamp variant" in Maslin (2001a) and Maslin & McDonald (2004), "*Acacia* sp. *Swamp* (N.M.Smith 3022) O'Leary" in Barker et al (2005), and "*Acacia* sp. *Swamp* (N.M.Smith 3022) SA Herbarium" in CHAH (2006).

Maslin (1995, 2001b) treated *A. retinodes* as a member of the '*A. microbotrya* group', noting that it is perhaps most closely allied to *A. confluens*, *A. leiophylla*, *A. rivalis* and *A. gillii*. *Acacia retinodes*, *A. uncifolia* and *A. provincialis* can also be confused with forms of *A. penninervis*, *A. rubida*, *A. quornensis*, *A. euthycarpa*, *A. neriifolia* and *A. alcockii*. *Acacia saligna* can also bear a superficial resemblance to *A. retinodes*, but can be distinguished by its plate glands, floral bracts and larger flowers. Distinctions between these species can be found in (Maslin 2001a, b) and on the website World Wide Wattle (2006).

## Taxonomy

The distinctions between *A. retinodes*, *A. uncifolia* and *A. provincialis* are summarised in Table 1.

### 1. *Acacia retinodes* Schltld.

Linnaea 20:664 (1847). — *Racosperma retinodes* (Schltld) Pedley, *Austrobaileya* 6(3): 484 (2003). **Type citation:** "Sehr verbreitet auf fruchtbarem Boden in der Nähe des Wassers in den Thälern, Januar." [Barossa Valley, S.A., perhaps from Schlinckens Ck]. **Holotype:** H. H. Behr s.n., without locality or date; HAL, n.v.; (photo: PERTH), **isotype:** MEL616152.



**Table 1.** Principal morphological and habitat features distinguishing *A. retinodes*, *A. uncifolia*, and *A. provincialis*.

Species	<i>Acacia retinodes</i>	<i>Acacia uncifolia</i>	<i>Acacia provincialis</i>
Habitat	Hills and plains	Coastal sands over limestone	Wet soil, creeks and swamps
Habit, ability to sucker	Erect tree, suckering	Rounded multi-branched shrub to tree, suckering	Slender to dense erect tree, not suckering
Bark	Rough, black to dark brown	Smooth-fissured, grey to dark brown	Smooth, grey
Phyllode length	(50-)60–160 mm long	(25-)30–75(-80) mm long	Variable, 90–200 mm long
Phyllode spacing along stem	Crowded, 4–10 mm apart	Crowded, 4–10 mm apart	Uncrowded, 10–20 mm apart
Phyllode apex	Uncinate	Uncinate or greatly so (recurved)	Straight or uncinate
Pruinosity	Non pruinose	Non-pruinose	Often lightly pruinose
Flowering time: normal (sporadic)	December–February	September–January (throughout the year)	September–January (throughout the year)
Flower colour	Cream to pale yellow	Cream to pale yellow	Golden, rarely pale, yellow
Flower no.	(16-)18–30(-34)	(16-)18–30(-32)	(18-)30–50(-54)
Ovary	Glabrous	Hairy	Glabrous
Pod width	8–11 mm	5–7 mm	5–7 mm

*A. retinodes* auct. non Schldl.: Mueller, J. Linn. Soc. 3: 126 (1859), partly, excluding pod description which is *A. provincialis*; Bentham, Fl. Austral. 2: 362-363 (1864), partly; Bentham, Trans. Linn. Soc. 30: 468 (1875), partly, excluding pod description which is *A. provincialis*; Mueller, Syst. Census Austral. Pl. 1: 44 (1882), partly; Black, Fl. S. Austral. 2: 277 (1924), partly; Adamson & Osborn, Trans. Proc. Roy. Soc. S. Austral. 48: 118, 137 (1924), partly; Stapf & Ballard 153: t. 9177, Bot. Mag. (1929), partly; Black, Fl. S. Austral. edn 2: 411 (1948), partly; Whibley, Acacias S. Australia. 112 (1980), partly; Boomsma, Native Trees S. Australia. 75 (1981), partly; Costermans, Native Trees & Shrubs SE Australia 319 (1981), partly; Elliot & Jones, Encycl. Austral. Pl. 2: 106 (1982), partly; Whibley, Fl. S. Austral. 2: 555 (1986), partly; Prescott, Its Blue With Five Petals. 90 (1988), partly; Simmons, Acacias Australia. 2: 176 (1988), partly; Dashorst & Jessop, Pl. Adelaide Plains Hills. 78 (1990), partly; Tame, Acacias SE Australia. (1992), partly; Whibley & Symon, Acacias S. Australia 142 (1992), partly; Maslin et al., Edible wattle seeds Sn Austral. 42 (1998), partly; Maslin, Fl. Austral. 11A: 281 (2001), partly.

*A. retinodes* Schldl. ('Normanville' variant): Maslin & McDonald, AcaciaSearch Eval. Acacia 182 (2004).

#### Illustrations and photographs.

Whibley (1980), 113 (photograph); Whibley & Symon (1992), 143 & 145 (photographs); Maslin et al. (1998), 43 (photographs); Maslin (2001a), "(*A. retinodes* var. *retinodes* 'typical variant')"; Maslin & McDonald (2004), 171, "(('typical' variant) & 183, "(('Normanville' variant) (photographs).

Upright tree to 10 m tall, with an erect branching habit, outer branches occasionally pendulous on mature plants, limited suckering present. *Branchlets* reddish, flattened, 3-angular and ribbed at first but soon terete, glabrous. *Bark* rough, furrowed, dark brown to black. *New shoots* glabrous, not pruinose. *Stipules* narrowly

to shallowly triangular, smooth to finely ribbed, often resinous, drying reddish brown, 0.5–1 mm long, minutely ciliolate. *Phyllodes* variable (corresponding to growth phase of plants and seasonal conditions), oblanceolate to narrowly oblanceolate to linear, gradually narrowed towards the base, (50-) 60–160 mm long, (2-) 3–12 (-16) mm wide, ascending to spreading, straight or more usually shallowly recurved, glabrous, green to grey-green, often with a silver-satin sheen in sunlight in drier months, crowded on stems, 4–10 mm apart; *midrib* central; *lateral nerves* obscure, *marginal nerves* narrow and yellow to light brown; *apices* acuminate, normally uncinate, with innocuous micro; *gland* single on upper margin of phyllode 0–3 (-7) mm above pulvinus. *Inflorescences* racemose, fragrant, 20–40 (-50) mm long, with 5–10 (-12) heads; *peduncles* 3–6 mm long, slender, glabrous; *heads* globular, 8 mm diam. (when fresh, drying 4–5 mm diam.), (16-) 18–30 (-34) flowered, cream to pale yellow. *Flowers* 5-merous; *sepals* clearly united, 1/3–1/2 petal length, oblong-oblanceolate to spatulate, with silver-cream hairs; *petals* 1.2 mm long, coated with short white hairs and papillose hairs lining edge and at summit, 1-nerved. *Ovary* glabrous. *Pods* linear, to 160 mm long, 8–11 mm wide, *Seeds* longitudinal in pods, oblong to oblong-elliptic, 4–6 mm long, dull to slightly shiny, dark brown to black; funicle 3/4 or more encircling seed in double fold, reddish brown to blackish; *aril* clavate. Fig. 1.

#### Distribution (Fig. 2).

Endemic to the Mount Lofty Ranges in South Australia, from near Mt Bryan and Clare, south to Normanville and Delamare on the southern Fleurieu Peninsula. Plantings in the southeast region of South Australia have become naturalised to a limited extent

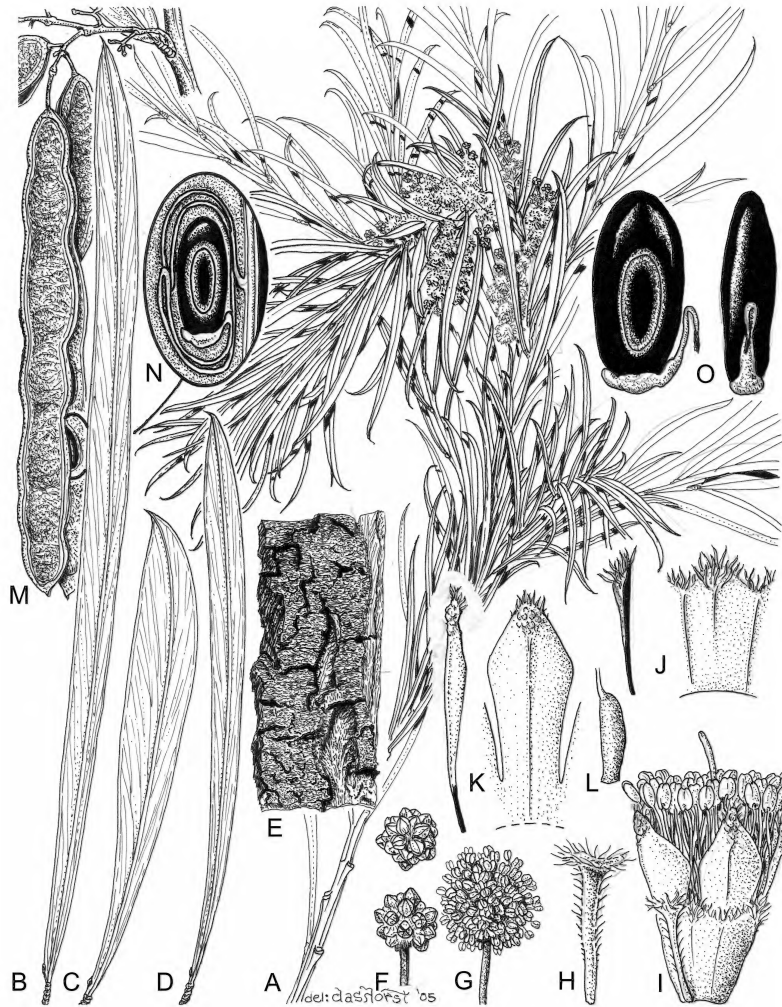


Fig. 1. *Acacia retinodes*. A – Flowering branch with mature phyllodes. B – D Phyllodes showing range of variation. E – Bark. F – Unopened inflorescence. G – Opened inflorescence. H – Bract. I – Flower showing fused sepals, free petals and stamens. J – Fused sepals with fringing hairs. K – Petals showing central rib and terminal hairs. L – Glabrous ovary. M – Pods. N – Seed showing terminal aril and funicle encircling in double fold. O – Seed in plain view showing pleurogram (left) and side view (right). (A composite from Kraehenbuehl 725; B from O'Leary 2518 (left hand phyllode); C from Bates 35891 (central phyllode); D from Donner 1287 (right hand phyllode); E from O'Leary 2729; F – L from Kraehenbuehl 275; M - O from Bates 35891. A&D x1; B x1/2; C x18; E x8; F x7; G&H x27; I,J&K x56; L x2; M x6; N-Q x9.

(e.g. the Millicent to Mt Gambier road). The species distribution is mapped by Maslin (2001a), as var. *retinodes* (typical variant) and Maslin & McDonald (2004, map 53).

#### Habitat.

Occurs in developed soils on low hills and ranges, in South Australian blue gum, peppermint box, and red gum woodlands, with an annual rainfall of 350–1000

mm. Associated species include *Eucalyptus leucoxylon*, *E. odorata*, *E. microcarpa*, *E. camaldulensis*, *E. obliqua*, *Bursaria spinosa*, *Allocasuarina verticillata*, *Acacia pycnantha*, *A. melanoxylon*, *A. paradoxa* and *A. euthycarpa*.

#### Conservation status.

Only remnants of the original habitat of *A. retinodes* remain, as much has been cleared for farming. *A.*

*retinodes* is palatable to stock and as early as the mid 1840s Behr noted the destructive effects grazing had caused to the habitat of the species. Many of the remaining populations appear to be confined to road verges, this in part due to its limited ability to sucker. Populations occur in Spring Gully Conservation Park, Kaiserstuhl Conservation Park, Anstey Hill Recreation Park, Black Hill Conservation Park, Morialta Conservation Park, Cleland Conservation Park, Mount Crawford Forest Reserve and Mt Bold Reservoir Reserve. However, most of these populations are small remnants, with the long-term viability of these being of some concern. Using the criteria of Briggs & Leigh (1996), a code of 3RCa is recommended for *A. retinodes*.

#### *Flowering and fruiting period.*

Flowering occurs in a distinct season from late December to February. Legumes with mature seeds have been collected from December to early February, these developing over winter from the previous seasons flowers.

#### *Typification*

The species was described by Schlechtendal (1847). Although the holotype is without locality or date, it was collected by Behr and annotated by Schlechtendal as "*Acacia retinodes* Schldl. Linn. xx. p. 664" (B.R. Maslin, pers. comm.). An interpretation of the type citation by Kraehenbuehl (pers. comm.) is that Behr collected this species in the Barossa Valley, South Australia, perhaps from Schlinckens Creek (where it still occurs). Behr's collecting localities are discussed in Kraehenbuehl (1981).

#### *Variation*

A variant of *A. retinodes* occurs at Yankalilla Bay over a 5 km area between Carrickalinga, Normanville and Lady Bay. It grows on sandy loams that run from behind coastal dunes to low hills about 2 km inland, and is restricted to a few remnant patches of vegetation and scattered individual plants. This variant is now considered to be a coastal form of *A. retinodes*, although previously it was thought to be a possible stable hybrid with *A. uncifolia*; see Maslin & McDonald (2004, as *A. retinodes*, 'Normanville' variant) for discussion.

Morphological characters of the Yankalilla Bay plants differ little from *A. retinodes* plants that occur elsewhere, apart from a more branched growth habit and having a few flowers in spring (i.e. September to November). Flowering is still largely restricted to a single season from December to February; the sporadic spring flowering of the Yankalilla plants may be due to the influence of the maritime environment in which it occurs. Young plants in sheltered sites have a single erect stem similar to typical *A. retinodes* from inland areas, so the bushy form may well be a response to physical pruning from coastal winds. Bark is predominantly rough in the population, although the photo in Maslin & McDonald (2004) is of a smooth bark specimen. The Yankalilla population lies

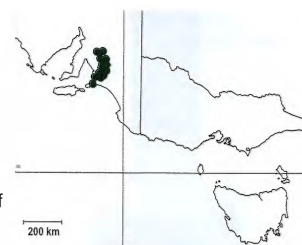


Fig. 2. Distribution map of *Acacia retinodes*.

within the original distribution of *A. retinodes*, and these were probably one of the only places where the species reached the coast. The closest population of *A. uncifolia* occurs 25 km away on sands overlying limestone, and where there are close associations with the vegetation of Kangaroo Island (where *A. retinodes* is absent). The Yankalilla Bay area has been largely cleared for farming and more recently housing subdivisions. Sections were also subjected to sand mining in the past with subsequent limited revegetation with exotic and local Australian species. No formal taxonomic rank is required for the Yankalilla Bay populations, although local revegetation and conservation measures are recommended to preserve this rare localised variant. These plants are readily distinguished from *A. uncifolia* by their longer phyllodes and glabrous ovaries.

#### *Affinities*

As noted by Maslin (2001a, b) *A. retinodes* is a member of the informal, Australia-wide '*Acacia microbotrya* group', of species. Its closest affinities are with *A. provincialis* and *A. uncifolia* (see Table 1) but it is also closely related to *A. confluens*, *A. leiophylla*, and *A. rivalis*.

#### *Hybrids*

No hybrids involving *A. retinodes* have been seen by the author. Maslin (2001a, b) noted that *A. semiaurea* is possibly a hybrid between *A. retinodes* and *A. argyrophylla* or *A. brachybotrya* (appressed haired variant). Although the author has not seen type material of *A. semiaurea*, the description for this species matches specimens of *A. argyrophylla* from Yorke Peninsula that are possible intergrades between that species and *A. brachybotrya* (appressed-haired variant). It is also possible that *A. semiaurea* is a hybrid between *A. euthycarpa* (wide-phyllode variant) and *A. argyrophylla*; specimens of this putative hybrid are lodged in the State Herbarium of South Australia (AD). Further study of *A. semiaurea* is needed to resolve its taxonomic status.

#### *Ethnobotany*

*A. retinodes* was mentioned in the diary of Wilkinson (1848), as "A. affinis" or "Silver Wattle", and together with *A. pycnantha*, called "Wattle", was noted as being "esteemed for their bark, which is used in tanning, and for the gum that exudes from them plentifully in hot weather". The export of gum became an early commercial enterprise in Adelaide. Wilkinson also noted



that "The natives roast the gum in the fire, and then eat it, seemingly with a great relish, and I suppose it is very nutritious. They were quite astonished when first they saw the white men collecting it all over the country, and feared that when it was all gone they would starve".

Fitzpatrick (1991) listed the Kaurna name "telleelya" for *A. saligna*, a Western Australian species, this name possibly refers to the superficially similar looking *A. retinodes*.

#### Utilisation

*A. retinodes* is rarely cultivated although there has recently been limited use of it in revegetation plantings in the Adelaide Hills. Maslin & McDonald (2004) noted that *A. retinodes* has good prospects for future cultivation and development, for wood, tannin, fodder, seed and gum products.

#### Etymology

The specific epithet is from Greek for resinous, in reference to the gum yielding properties. Behr communicated information to Schlechtendal concerning the gum yielding properties of this species, as noted in the original description.

Stapf & Ballard (1929) and Black (1924) used the specific name *rhetinodes* reflecting the correct Greek spelling. However *retinodes*, the spelling Schlechtendal used in the protologue, has remained in common usage and, as the original spelling, is here retained.

#### Common names

*Silver wattle*, *wirilda*. Behr recorded that the common name "Silver Wattle" was in use in the 1840s, together with "Willow", by the German colonists. Today, "Silver Wattle" is a common name that is used for several other *Acacia* species, so would be a confusing name for *A. retinodes*. "Hills Wirilda" is suggested as a possible common name.

#### Selected specimens examined. (ca 90 specimens total).

SOUTH AUSTRALIA: Morialta Gully, 7 Feb. 1922, *J.M. Black s.n.* (AD96728025); Normanville, 17 Jan. 1924, *J.B. Cleland s.n.* (AD96418265); c. 16 km SW of Eudunda, *B. Copley 3300* (AD, MEL; n.v. L, LE, M); NE of Tanunda, *D.N. Kraehenbuehl 1848* (AD; n.v. L, NY, PRE, W); Tamma Creek, Tothill Range, *D.N. Kraehenbuehl 5386* (AD); Ca 2 km due NNE of Normanville Fleurieu Peninsula, *B.R. Maslin 8355* (AD; n.v. PERTH, CANB); 0.3 km NW of Bull Creek hamlet on the Meadows - Ashbourne road, *B.R. Maslin 8358* (AD; n.v. PERTH, CANB); Torrens River, 1847, *F. Mueller s.n.* (right hand side of MEL2082778); Onkaparinga River, 1848, *F. Mueller s.n.* (MEL2082753); Kaiser Stuhl Conservation Park, *D.E. Murrfet 912* (AD); Cape Jarvis to Delamere Rd., 2 km SW of Delamere, *M.C. O'Leary 2641* (AD); Mt Bryan, *M.C. O'Leary 2729* (AD); Mt Barker-Wistow Rd., *N.M. Smith 2637* (AD; n.v. PRE, PTBG); Anstey Hill Recreation Park, *A.G. Spooner 10577* (AD); Mt. Bold hillsides, *J.G.O. Tepper 364* (bottom centre of AD96920224D); Angaston, 3/1/1882, *J.G.O. Tepper 502/363* (bottom left hand side of AD9692022C); Rockleigh, *D.J.E. Whibley 5654* (AD); Carrickalinga, near sand work, *D.J.E. Whibley 9987* (AD).

## 2. *Acacia uncifolia* (J.M.Black) O'Leary, *comb. et stat. nov.*

*Acacia retinodes* var. *uncifolia* J.M.Black, Trans. Proc. Roy. Soc. S. Austral. 56: 42 (1932), (*as rhetinodes*), **basionym**. J.M.Black, Fl. S. Austral. 2: 411 (1948); Willis, Handb. Pl. Victoria. 2: 227 (1973, as 1972); Whibley, *Acacias S. Australia*. 112 (1980); Costermans, *Native Trees & Shrubs SE Australia* 319 (1981); Elliot & Jones, *Encycl. Austral. Pl.* 2: 106 (1982), partly; Bernhardt et al. *Ann. Miss. Bot. Gdn.* 71: 17 (1984); Whibley, *Fl. S. Austral.* 2: 555-556 (1986); Simmons, *Acacias Australia* 2: 176 (1988); Prescott, *Its Blue With Five Petals*. 90 (1988), partly; Knox et al., *Austral. J. Bot.* 37: 104 (1989); Whibley & Symon, *Acacias S. Australia* 142 (1992); Lynch, *Conservation. Biology. Management. of 16 Threatened. Fabaceae sp. Tasmania*. 42 (1993); Entwisle et al., *Fl. Victoria*. 3: 637 (1996); Prescott, *Its Blue With Five Petals Kangaroo Is.* 150 (1995); Maslin et al., *Edible wattle seeds southern Australia*. 42 (1998); Maslin, *Fl. Austral.* 11A: 281-283 (2001b); Maslin, (coord.) *WATTLE Acacias Australia*. (2001a); Ross & Walsh, *Census Vascular Pl. Victoria* 7: 92 & 126 (2003); Maslin & McDonald, *AcaciaSearch - Evaluation Acacia woody crop southern Australia* 186 (2004) — **Type citation**: "Waitpinga Road, near Encounter Bay." — *Racosperma retinodes* var. *uncifolium* (J.M.Black) Pedley, *Austrobaileya* 6(3): 489 (2003). Holotype: *J.B. Cleland*, [South Australia, 25 Jan. 1932.]; AD; isotype: AD, K.

*Acacia retinodes* auct. non Schldl.: Mueller, *J. Linn. Soc.* 3: 126 (1859), partly; Benthams, *Fl. Austral.* 2: 362-363 (1864), partly; Benthams, *Trans. Linn. Soc.* 30: 468 (1875), partly; Mueller, *Syst. Census Austral. Pl.* 1: 44 (1882), partly; Tate, *Trans. Proc. Roy. Soc. S. Austral.* 6: 139, 155 (1883), partly; Black, *Fl. S. Austral.* 2: 277 (1924), partly; Stapf & Ballard, 153: t. 9177, *Bot. Mag.* (1929), partly; Curtis & Morris, *Students Fl. Tasmania*. 128 (1975); Gailbraith, *Victorian Nat.* 77: 73 (1960), partly; Boomsma, *Native Trees S. Australia*. 75 (1981), partly; Prescott, *Its Blue With Five Petals*. 90 (1988), partly.

#### Illustrations and photographs

Whibley (1980), 113, Fig B; Costermans (1981), 319, Fig b; Whibley (1986), 2: 557, Fig 288 (single phyllode, right hand side); Simmons (1988), 2: 177, (small central phyllodes); Prescott (1988), 90, Fig 2 (left hand side 'coastal'); Whibley & Symon (1992), 143, Fig B; Lynch (1993), 42, (small central phyllodes); Prescott (1995), 151 (top centre 'coastal'); Entwisle et al. (1996), 3: 636, Fig i; Maslin et al. (1998), 44 & 45, (photographs, and upper central Fig (excluding lower left hand side); Maslin (2001b), 11A: 280, Fig J; Maslin (2001a), (as *A. retinodes* var. *uncifolia*); Maslin & McDonald (2004), 187 (photographs).

Large rounded *shrub* to small *tree*, 5–10 m tall, *stems* twisted, single stemmed or with several main stems from near ground level, crowns bushy, limited suckering present. *Branchlets* reddish, angular at first but soon terete, glabrous, marked with rather prominent raised leaf bases where phyllodes have fallen. *Bark* smooth, becoming longitudinally fissured with age, grey to dark brown. *New shoots* glabrous, not pruinose. *Stipules* shallowly triangular, with wide central rib (rarely 3) and thickened base, often with a dark resinous coating, 0.7–1.3 mm long, fringed with short white to red/brown hairs. *Phyllodes* oblanceolate to narrowly oblanceolate, rather abruptly narrowed at

apex into a delicate recurved-uncinate point, (25–) 30–75 (–80) mm long, (2–) 3–10 (–15) mm wide, ascending to spreading, straight or shallowly recurved, glabrous, green to grey-green, crowded on stems, 4–10 mm apart; *midrib* central to slightly eccentric, not pronounced; *lateral nerves* inconspicuous, *marginal nerves* narrow, yellow to light brown when dry; *gland* single on upper margin of phyllode 0–8 mm above pulvinus. *Inflorescences* 1 per node, racemose, fragrant, *racemes* 20–40 (–50) mm long, with 5–10 (–12) heads; *peduncles* 2–5 mm long, slender, glabrous, yellowish or brown when dry; *heads* globular,

8 mm diam. (when fresh, drying 4–5 mm diam.), (16–) 18–30 (–32) flowered, cream to pale yellow. *Flowers* 5-merous; *sepals* clearly united,  $\frac{1}{5}$ – $\frac{1}{2}$  petal length, obtusely 5 lobed, oblong-oblongate to spatulate, fringed with silver-golden hairs; *petals* 1.7 mm long, easily separating, glabrous, but thickened and papillose at summit. Ovary covered with scattered to dense short white hairs. *Pods* linear, often slightly constricted between the seeds, with occasional random deep constrictions, to 160 mm long, 5–7 (–8) mm wide, firmly chartaceous, straight to slightly curved, glabrous. *Seeds* longitudinal in pods, oblong to



Fig. 3. *Acacia uncifolia*. A – Flowering branch with mature phyllodes. B – D – Phyllodes showing range of variation. E – Bark. F – Unopened inflorescence. G – Opened inflorescence. H – Bract and sepal. I – Flower showing bract, fused sepals, petals and stamens. J – Bract. K – Petals showing thickened glandular lobes. L – Sepals. M – Hairy Ovary. N – Pods showing longitudinal seeds. O – Seed showing terminal, aril and funicle encircling in double fold. P – Seed in plain view showing pleurogram (left) and side view (right). (A from Alcock 3945; B from Fagg 395 (left hand phyllode); C from Whibley 10173 (central phyllode); D from Lothian 1260 (right hand phyllode); E from O’Leary 2368; F – L from Alcock 3945; M – O from Bates AD99318155). A & D x1; B x1/2; C x18; E x8; F x7; G & H x27; I, J & K x56; L x2; M x6; N–Q x9.

oblong-elliptic, 4–6 mm long, dull to slightly shiny, dark brown to black; funicle  $\frac{3}{4}$  or more encircling seed in double fold, reddish brown to blackish; aril white, clavate. Fig. 3.

*Distribution* (Fig. 4).

*A. uncifolia* has a disjunct distribution in coastal and near coastal areas of south-eastern Australia, from Kangaroo Island and the southern Fleurieu Peninsula in South Australia, Point Impossible near Torquay to Wilsons Promontory in Victoria, and King and Flinders Islands in Bass Strait, Tasmania. The distribution is mapped by Maslin (2001a), and Maslin & McDonald (2004), but their records of *A. uncifolia* on the southern Eyre Peninsula are now known to represent *A. alcockii*.

#### *Habitat*

Occurs in coastal habitats, on dunes and sandy soils over limestone. Associated species include *Banksia integrifolia*, *Eucalyptus diversifolia*, *E. globulus*, *E. rugosa*, *Melaleuca lanceolata*, *Allocasuarina verticillata*, *Acacia longifolia* subsp. *sophorae*, *A. cupularis*, *A. triquetra*, *Adriana quadripartita*, *Beyeria lechenaultii*, *Olearia axillaris*, *Leucopogon parviflorus*, and *Leptospermum laevigatum*.

#### *Conservation status*

Populations of *A. uncifolia* are well conserved in South Australia in the Newland Head Conservation Park on Fleurieu Peninsula, Cape Gantheaume Conservation Park, Kelly Hill Caves Conservation Park and Flinders Chase National Park on Kangaroo Island. Those in Victoria are conserved in the Point Nepean and Wilsons Promontory National Parks, while those on Flinders Island are reserved in the Wybalenna Historic Site and several small coastal reserves. This species is given a rare status in Tasmania under the Threatened Species Protection Act, Lynch (1993) (Threatened Flora of Tasmania 2006). This publication and website record the occurrence of *A. uncifolia* for only Flinders Island, however a small population of this species is now known to occur on King Island.

#### *Flowering and fruiting period*

Flowering is reported by Maslin & McDonald (2004), to be variable over its discontinuous distribution. Peaks in flowering for South Australia have been recorded from October to December (Whibley & Symon 1992), and November to January for Kangaroo Island (Jackson

1988), December to February in Victoria (Bernhardt et al. 1984), and December to April in Tasmania (Lynch 1993). However, sporadic flowering occurs in all populations throughout the year. Legumes with mature seeds have been collected from December to January, and develop over winter from the previous seasons flowers.

#### *Variation*

There appears to be little significant variation between the disjunct populations of *A. uncifolia*, although Maslin & McDonald (2004) noted that plants from Cape Schanck in Victoria are taller and possessed straighter stems than those from Waitpinga Beach in South Australia. The extensive areas of natural vegetation on Kangaroo Island and populations of *A. uncifolia* that occur there enable a more comprehensive understanding of the natural variation within this species. Plants growing on deeper sands in sheltered locations can form trees 5–10 m tall, and often tend to have longer narrower phyllodes, while plants in exposed locations on shallow sand grow as dense shrubs with shorter leathery phyllodes. This phyllode variation is illustrated in Fig. 3 (B, C, & D).

#### *Affinities*

*A. uncifolia* is closely related to *A. retinodes*, and was until recently treated as a variety of that species. However, significant differences exist between these two taxa and these justify recognition of them as distinct species.

*A. uncifolia* superficially resembles some specimens of *A. alcockii*, and until recently occurrences attributed to *A. uncifolia* on lower Eyre Peninsula were misidentifications of *A. alcockii*. However, its larger number of flowers per head, wider phyllodes, and pods with seeds transversely aligned distinguish *A. alcockii* from *A. uncifolia*. Phyllodes of *A. uncifolia* may also resemble some specimens of *A. euthycarpa*, and *A. flocktoniae* Maslin & McDonald (2004) and although these two species are in the same general group as *A. uncifolia* they are not especially closely related to the new species.

#### *Hybrids*

No specimens of *A. uncifolia* are known to show any morphological evidence of hybridity. The population of *A. retinodes* from Carrickalinga (Normanville Beach), south of Adelaide, discussed in Maslin & McDonald (2004, as 'Normanville' variant) and previously postulated to be a stable hybrid with *A. uncifolia*, is now considered to be a coastal form of *A. retinodes* (see discussion above).

#### *Etymology*

The specific epithet is derived from Latin, *unci-folia*, and refers to the characteristically hooked mucro found on the phyllodes.

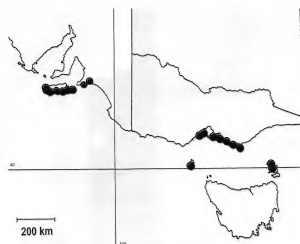


Fig. 4. Distribution map of *Acacia uncifolia*.



**Common names**

*Summer wattle* (Jackson 1988), *wirilda*. “Coast Wirilda” or “Coastal Wirilda” is suggested as possible common names for this species.

**Selected specimens examined. (ca 110 specimens total).**

SOUTH AUSTRALIA: Flinders Chase, C.R. Alcock 10733 (AD); Cape Borda Cemetery, P. Canty 10076 (AD); Waitpinga, Encounter Bay, Feb. 1924, J.B. Cleland s.n. (AD97413383); Rocky River, away from water, 7 Dec. 1934, J.B. Cleland s.n. (AD96728029); Hog Bay, 1918, E.H. Ining s.n. (AD97324155); at the top of Mt Thisby, G. Jackson 473 (AD); Waitpinga Beach, 1 km inland, B.R. Maslin 6005 (AD); road into Hanson Bay, M.C. O’Leary 1937 (AD); D’Estrees Bay, Point Tinline, M.C. O’Leary 2368 (AD); roadside between Parson’s Beach and Willow Creek, A.G. Spooner 7672 (AD); Kangaroo Island, in the swales between dunes at Pennington Bay, D.E. Symon 8488 (AD); scrub, Mt Tisbet, [sic] 13 Mar. 1884, J.G.O. Tepper s.n. (AD97303206); Waitpinga, behind dunes, D.J.E. Whibley 9988 (AD).

VICTORIA: Wilsons Promontory National Park, A.C. Beuglehole 75169 & J.G. Eichler (MEL); Point Lonsdale, B.G. Dangerfield 3 (AD); Cape Schanck area, c. 14 km due W of Flinders, B.R. Maslin 5473A (AD, MEL; n.v. CANB, PERTH); Barwon Heads, Jan. 1913 A. Purnell s.n. (AD98814118); Mornington Peninsula, Rye, junction of Cain Rd. and Molloy St. J.H. Ross 2529 (AD, MEL).

TASMANIA: Currie, King Is., 28 Jan. 1971, P. Barnett s.n. (MEL103738); edge of Camp Creek, Currie, King Is., Mar. 2006, M. & G. Batey 4 (AD); Cave Beach, Wybalenna, Flinders Island, P.J. Cullen s.n., 22 Sep. 1990 (AD99128374; n.v. HO).

**3. Acacia provincialis A. Camus**

Bull. Soc. Dendrol. France 64: 68-69, (1927). **Type citation:** “Var: Pampelonne, commune de Ramatuelle.” **Lectotype (here selected by B.R. Maslin, pers. comm.):** *A. Camus s.n.*, Mar. 1927, cultivated at Var, Pampelonne, commune de Ramatuelle; P n.v. (photo: PERTH 06315410).

- A. retinodes* var. *floribunda* H.Vilm., J. Roy. Hort. Soc. ser. 2, 16: 84, fig. 2 (1894), nom. inval. (name not accepted by the author in text on p. 85); fide O.Stapf & F.Ballard ser. 2, Bot. Mag. 153: t. 9177 (1929) and B.R.Maslin Fl. Aust. 11B: 378 (2001).
- A. floribunda* Hort. ex G. Nicholson, Ill. Dict. Gard., Cent. Suppl. 4 (1900), pro syn. sub *A. retinodes*, non *A. floribunda* (Vent.) Willd. (1806).
- A. fragrans* Hort. ex Pottier, Jardin 22: t. 72, fig. 2 (1908), nom. nud., non Ten. (1845): fide O.Stapf & F.Ballard, loc. cit.
- A. semperflorens* Hort. ex A. Berger, Hort. Mortol. 7 (1912), pro syn. sub *A. retinodes*.
- A. longissima* Hort. ex Chopinet, Ann. Inst. Natl. Rech. Agron., Ser. B, Ann. Amelior. Pl. 1 (4): 603 (1951), pro syn. sub *A. retinodes*, non *A. longissima* Hort. ex H.L.Wendl. (1820).
- A. retinodes* Schldtl. var. *retinodes* “Swamp Wattle” in Maslin, Fl. Aust. 11A: 280 (2001).
- A. retinodes* Schldtl. var. *retinodes* “swamp variant” in Maslin, WATTLE Ac. Australia. (2001)
- A. retinodes* Schldtl. var. *retinodes* “swamp variant” in Maslin & M.W. McDonald, AcaciaSearch – Eval. Ac. 176 (2004).
- A. sp. Swamp* (N.M.Smith 3022) O’Leary in W.R.Barker et al., Cens. S. Austral. Vasc. Pl. 5<sup>th</sup> Edn, 67 (2005).

*A. retinodes* auct. non Schldtl.: Mueller, J. Linn. Soc. 3: 126 (1859), partly, excluding pod description which is *A. provincialis*; Benth., Fl. Austral. 2: 362-363 (1864), partly; Benth., Trans. Linn. Soc. 30: 468 (1875), partly, excluding pod description which is *A. provincialis*; Mueller, Syst. Census Austral. Pl. 1: 44 (1882), partly; Tate, Trans. Proc. Roy. Soc. S. Austral. 6: 138, 155 (1883), partly; G. Nicholson, Ill. Dict. Gard., Cent. Suppl. 4 (1900), partly; A. Berger, Hort. Mortol. 7 (1912), partly; Rock, Leguminous Pl. Hawaii. 23 (1920); Black, Fl. S. Austral. 2: 277 (1924), partly; Adamson & Osborn, Trans. Proc. Roy. Soc. S. Austral. 48: 108, 120, 122, 137. (1924), partly; Stapf & Ballard 153: t. 9177, Bot. Mag. (1929), partly; Black, Fl. S. Austral. edn 2: 411 (1948), partly; Chopinet, Ann. Inst. Natl. Rech. Agron., Ser. B, Ann. Amelior. Pl. 1 (4): 603 (1951); Gailbraith, Victorian Nat. 77: 73 (1960), partly; Willis, Handb. Pl. Victoria. 2: 227 (1973, as 1972), partly; Whibley, Acacias S. Australia. 112 (1980), partly; Polunin, Flowers. Greece & Balkans. 280 (1980); Boomsma, Native Trees S. Australia. 75 (1981), partly; Costermans, Native Trees & Shrubs SE Australia 319 (1981), partly; Elliot & Jones, Encycl. Austral. Pl. 2: 106 (1982), partly; Whibley, Fl. South Austral. 2: 555 (1986), partly; Prescott, Its Blue With Five Petals. 90 (1988), partly; Simmons, Acacias Australia 2: 176 (1988), partly; Dashorst & Jessop, Pl. Adelaide Plains Hills. 78 (1990), partly; Tame, Acacias SE Australia (1992), partly; Whibley & Symon, Acacias S. Australia 142 (1992), partly; Huxley et al. Roy. Hort. Soc. Dictionary. Gardening. 1: 16 (1992); Prescott, Its Blue With Five Petals Kangaroo Is. 150 (1995); Entwisle et al., Fl. Victoria. 3: 635, 637 (1996); Maslin et al., Edible wattle seeds southern Australia. 42, 45 (1998), partly; Maslin, Fl. Austral. 11A: 281 (2001), partly; Spencer, Horticultural. Fl. S. East. Australia. 3: 244 (2002); Ross & Walsh, Census Vascular Pl. Victoria. 7: 92, 126 (2003).

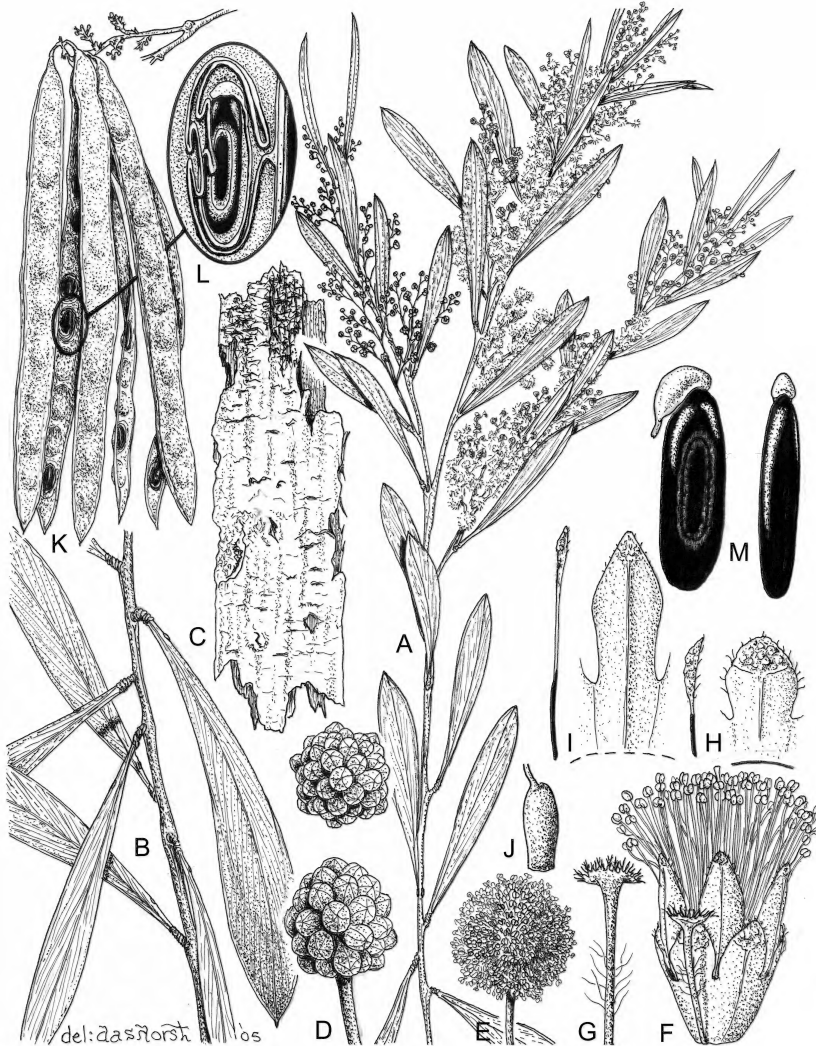
**Illustrations and photographs**

(All as *A. retinodes* unless otherwise named); De Mole (1861), pl. 13 (right hand side, as “Silver Wattle”); Mueller (1887), dec. 5 [pl. 9]; Vilmorin (1893), 14: 84, Fig. 2; Anon. (1919), ser. 3, 65: 163, Fig. 68; Campbell (1921), 51 (photograph); Stapf & Ballard (1929), 153: Tab. 9177 (excluding pod & seed, which is *A. nerifolia*); Black (1948), 2 411; Gailbraith (1960), 77: 73 (photograph); Boomsma (1981), 76 (left hand side); Whibley (1980), 113, Figs A, L, S; Costermans (1981), 319, Fig a; Elliot & Jones (1982), 2: 106 (photograph); Elliot (1984), 15, (lower right hand side), 18, (lower right hand side photograph); Whibley (1986), 2: 557, Fig 288A (excluding single phyllode, right hand side); Simmons (1988), 2: 177, (excluding small central phyllodes); Prescott (1988), 90, Fig 2 (right hand side); Dashorst & Jessop (1990), pl XXX11 Fig 9; Tame (1992), 134, Fig 141, pl. 141; Whibley & Symon (1992), 143 Figs A, L, S; McCann (1994), 80 (lower left hand side photograph); Prescott (1995), 151, Fig. 2; Entwisle et al. (1996), 3: 636, Fig h; Maslin et al. (1998), 44 (lower photograph), 45 (lower illustration); Maslin (2001b), 11A: 280, Fig G-I; Maslin (2001a), (as *A. retinodes* var. *retinodes* ‘swamp variant’); Spencer (2002), 244; Bonney (2003), 51; Maslin & McDonald (2004), 177 (photographs).

Slender, erect to medium-spreading tree, 5–10 m tall, trunk solitary, often dividing near ground level into several ascending stems, crowns open to bushy. Branchlets reddish-brown, often lightly (rarely strongly) pruinose, prominently flattened and angular, ribbed (often continuous below

phyllode) at first but soon terete, glabrous. *Bark* smooth, grey. *New shoots* glabrous, ribbed, often lightly pruinose. *Stipules* triangular, 1–1.2 mm, with a fine central rib that is often continuous with rib on the peduncle, fringed with fine white hairs. *Phyllodes* variable (corresponding to growth phase of plants, habitat and seasonal conditions), linear, erect, 100–200 mm long, 4–10 mm wide, (juvenile growth

phase); to oblanceolate, erect or spreading, 100–150 mm long, 15–25 (–35) mm wide, to narrowly oblanceolate or narrowly elliptic, erect to spreading, 90–140 mm long, 5–10 mm wide, (adult phase); straight or shallowly recurved, glabrous, blue-green to grey-green, glaucous, often lightly pruinose, uncrowded on stems, commonly 10–20 mm apart, *midrib* central to slightly offset; *lateral nerves*



**Fig. 5. *Acacia provincialis*.** A – Flowering branch with mature phyllodes. B – Phyllodes, erect to spreading on branch. C – Bark. D – Unopened inflorescence. E – Opened inflorescence. F – Flower showing bract, sepals, petals and anthers. G – Bract. H – Sepal showing rib, thickened summit and fringing hairs. I – Petals showing central rib, terminal glands and papillose hairs. J – Glabrous ovary. K – Pods showing longitudinal seeds. L – Seed showing terminal aril and funicle encircling in double fold. M – Seed in plain view showing pleurogram (left) and side view (right). (A – K from O'Leary 1984, 2630, 2721 & 2723; K – M from O'Leary 2281. A&D x1; B x1/2; C x18; E x8; F x7; G&H x27; I, J&K x56; L x2; M x6; N–Q x9.

inconspicuous; *marginal nerves* narrow and yellow to light brown; *apices* straight to uncinata, with a delicate mucro; *gland* single, rarely 2–4, on upper margin of phyllode 0–16 mm above pulvinus. *Inflorescences* racemose 20–40 (–50) mm long, with 5–10 (–12) heads; *peduncles* (3–) 4–5 (–7) mm long, glabrous, yellowish or brown when dry; *heads* globular, 8 mm diam. (when fresh, drying 4–5 mm diam.), (18–) 30–50 (–54) flowered, golden to pale yellow. *Flowers* 5-merous; *sepals* clearly united,  $\frac{1}{2}$ – $\frac{2}{3}$  petal length, 5-lobed, lobes thickened & ciliate, oblong-oblancheolate to spatulate, with silver-golden hairs; *petals* 1.5–1.8 mm long, single nerved, glabrous, but thickened and papillose at summit. Ovary glabrous. *Pods* linear, to 160 mm long, 5–7 (–8) mm wide, firmly chartaceous to thinly crustaceous, glabrous. *Seeds* longitudinal in pods, oblong to oblong-elliptic, 4–6 mm long, dull to slightly shiny, dark brown to black; funicle  $\frac{3}{4}$  or more encircling seed in double fold, reddish brown to blackish; *aril* clavate. Fig. 5.

*Distribution* (Fig. 7).

*A. provincialis* has a discontinuous distribution in southeastern Australia, from near Mt Crawford in the Mt Lofty Ranges, through the Fleurieu Peninsula and Kangaroo Island. It is absent from the Murray Basin and southeastern region of South Australia (apart from a single collection near the Victorian Border). The species is common in the Grampians and occurs along the Glenelg River in western Victoria, then eastward to near Melbourne. *A. provincialis* is used in revegetation and roadside plantings west of Melbourne, and seedlings from these plantings have been observed by the author in several locations, this together with the extensive clearance of the original vegetation, may obscure natural populations of *A. provincialis* in this area in the future. A recent collection from Currie, King Island requires further investigation to determine if it represents a natural population. A single specimen from Launceston in northern Tasmania (*Hannaford* MEL2081138) has a label in Mueller's handwriting questioning it as having been cultivated. The distribution of *A. provincialis* is mapped by Maslin (2001a), as var *retinodes* swamp variant, and Maslin & McDonald (2004, map 55).

#### Habitat

Occurs in damp soils along watercourses and freshwater swamps, spreading to moist valley slopes in high rainfall areas. Associated species include *Eucalyptus camaldulensis*, *E. leucoxyton*, *E. ovata*, *E. viminalis*, *Leptospermum lanigerum*, *L. continentale*,

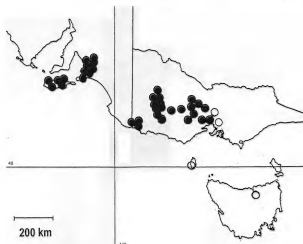


Fig. 7. Distribution map of *Acacia provincialis*. (○ = questionable occurrence).

*Viminaria juncea*, *Acacia melanoxyton*, *A. verticillata*, *Gahnia sieberiana*, *Blechnum minus*, *Phragmites australis*.

#### Conservation status

*A. provincialis* is well conserved in South Australia in parks in the Mt Lofty Ranges and Kangaroo Island, and in western Victoria in the Lower Glenelg and Grampians National Parks.

#### Flowering and fruiting period

Flowering peaks occur from September till January, with scattered flowering throughout the year. Flowering peaks appear to occur roughly 5–6 months after winter rains. April rains produce a peak in September to October, June rains producing a peak in December to January. Legumes with mature seeds have been collected from December to January.

#### Typification

*A. provincialis* was described in 1927 by Camus from cultivated material at Pampelonne, commune de Ramatuelle, in the south of France. Camus thought he was describing a hybrid between *A. retinodes* and *A. cyanophylla* (= *A. saligna*), after finding a single distinct plant growing amongst 30 year old plantings of these two species. It appears from the protologue that Camus considered the variable phyllode states to be a sign of hybridity; however this is a normal characteristic of this species in Australia related to environmental conditions and the biological age of the plant.

The lectotype specimen of *A. provincialis* at P consists of a mounted specimen (together with a loose specimen), and accompanying label,

Herbier E.G. Camus & A. Camus.  
 × *Acacia provincialis* A. Camus, Hyb. Sport.  
 (*A. cyanophylla* Lind. × *retinodes* Schl.)  
 Var. Pampelonne, commune de Ramatuelle  
 Mars 1927

together with a signature of A. Camus. The loose overlying specimen from the sheet represents an isolectotype. The three remaining type sheets of *A. provincialis* at P bear identical labels; they represent syntypes and are specimens of *A. saligna* and *A. pycnantha* (B.R. Maslin pers. comm.).

Camus's view that the phyllodes of *A. retinodes* should be erect, narrow and linear (normally a juvenile state for the species he was describing), could possibly relate to local climatic conditions, or a silvicultural response related to pruning (to regulate flowering times), or possibly cultivar selection.

The other possibility could be a familiarity with the protologue for *A. retinodes* and the description of linear phyllodes written by Schlechtendal. Without an examination of the type material housed at HAL, Camus probably was unaware that what had been called *A. retinodes* in France for the forty years of its cultivation was in fact another species.

Examination of the lectotype of *A. provincialis* shows no evidence of hybridity, or presence of the

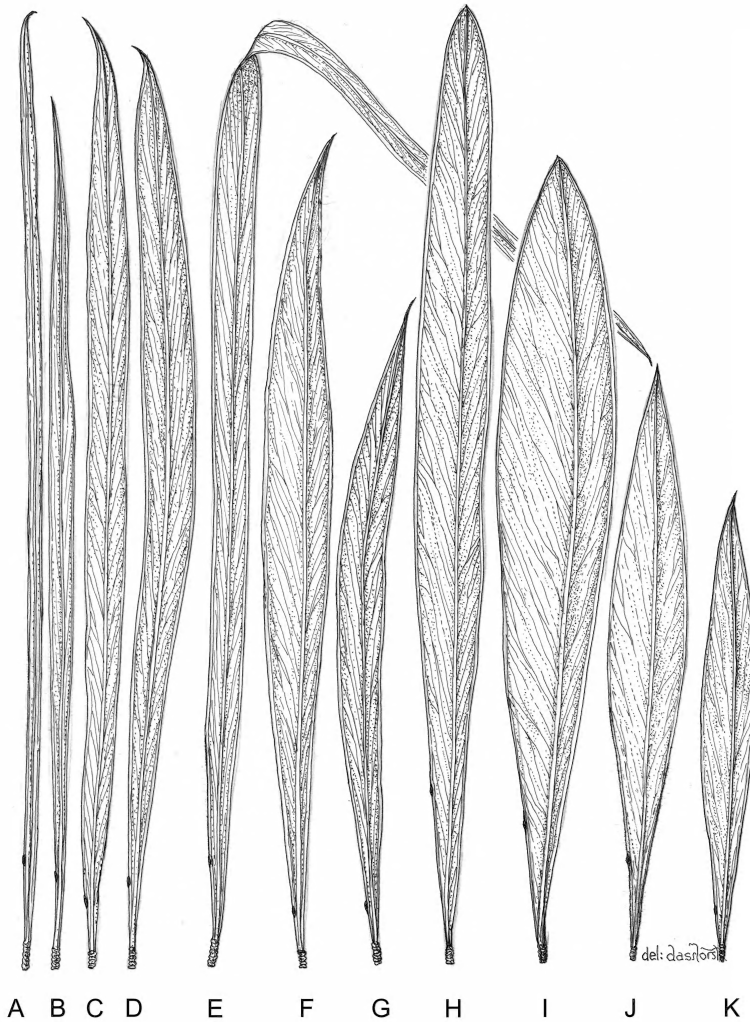


characteristic plate glands or floral bracts of *A. saligna* (Maslin 2001b, and pers. comm.).

*Variation*

*A. provincialis* is a variable species whose appearance and morphology is influenced by the age of the plants and by habitat conditions. Habit can vary from erect slender trees in open wet swamps, to slender pendulous trees in shaded forests, or dense rounded trees to 10

metres tall in fertile soils alongside permanent water. Differing phyllode states often occur together on a single plant or branch, or conversely a plant may be dominated by one state (Fig. 6.). Specimens from Black Swamp south of Adelaide have erect linear phyllodes that appear to be a response to permanently waterlogged growing conditions, whereas plants 20 metres away on better-drained soil have more typical wider phyllodes. Plants from western Kangaroo Island growing on the



**Fig. 6. Phyllode variation in *A. provincialis*.** A – B – Juvenile phyllodes. C – I – Mature phyllode variation covering seasonal and habitat variation. J – K – Late maturity. (A composite from O'Leary 2722; B – D from O'Leary 4116; E from O'Leary 2723; F from O'Leary 1984; G from O'Leary 2281; H – I from O'Leary 2630; J from O'Leary 4116; K from O'Leary 1984. A – K (life size).

exposed lateritic plateau often possess wide leathery phyllodes, with strongly pruinose branchlets and pods. Phyllodes on plants elsewhere are normally thinly textured and often lightly pruinose. Occasional plants can be strongly glaucous, this appears to have occurred in France, with the selection of the “var glauca” cultivar, which is grafted for the cut flower trade.

Several collections from central Victoria, near Ballarat and Bendigo (*Willis MEL1501102*), (*Beaglehole MEL2039795*) and (*Smith MEL572771*), have pale yellow flowers with 18–20 flowers per head, and small glaucous phyllodes, which infrequently have more than one gland per phyllode. This variant may be worthy of further study, but this may prove difficult, as this area has been extensively cleared, and recent plantings of unknown provenance are becoming naturalised.

#### Affinities

*A. provincialis* is considered by Maslin (1995, 2001a, b), and Maslin & McDonald (2004) as being a South Australian member of the Australia wide ‘*A. microbotrya* group’, perhaps most closely related to *A. confluens*, *A. leiophylla*, *A. rivalis*, and *A. gillii*. Distinguishing characters between *A. provincialis*, *A. retinodes* and *A. uncifolia* are summarised in Table 1.

#### Hybrids

No hybrids involving *A. provincialis* have been seen by the author.

#### Ethnobotany

The name “Wirrildar” was first recorded from the Ramindjeri Clan of the Narrinyeri People, from the southern Fleurieu Peninsula. This was a name for a gum-producing wattle tree. The “Ngaitye” or Totem of the Ramindjeri was “Wattle gum” Taplin (1879). Several other similar words from the Ramindjeri language have been recorded, including; “wurrulde”, for *Acacia* or wattle tree (Meyer 1843), and “wuruldi” for golden wattle totem (Tindale 1934–37), (P. Clarke, pers.comm. Sept. 2006). Clarke also notes that the word “wirilda” was almost solely used by non-Aboriginal people by the 1980s (P. Clarke, in prep.).

The “country” of the Ramindjeri occurs from near the present town of Victor Harbor to near Cape Jervis. In this area *A. provincialis* is relatively common, and was probably abundant along the numerous creeks, rivers and valleys. *A. uncifolia* is locally common near Waitpinga Beach, while *A. retinodes* appears to have been rare or absent, though it occurs nearby. *A. pycnantha* is the other gum-producing species from this area, but it was normally distinguished by early settlers, and known as “wattle”. Further study would be required to determine how specifically this name was applied to these species.

#### Utilization

*A. provincialis* is sold in Australian nurseries as a quick growing, long flowering small tree with edible

seed. It is often used in revegetation projects, but because it has been confused with *A. retinodes* and *A. uncifolia*, plantings have been made in inappropriate sites with habitats that better suit these other species. This has resulted in the underperformance of plantings, or the unintentional introduction of non local species to an area. Some publications note that this species is resistant to saline conditions, but these references may in part relate to the coastal species *A. uncifolia*. Interestingly, Wallace (1986) found *A. retinodes* (presumably referring to *A. provincialis*) to be resistant to salinity due to its ability to withstand waterlogging.

Although sold as *A. retinodes*, *A. provincialis* has been an important component of the cut flower industry in Europe for more than one hundred years (see Vilmorin 1894, Stapf & Ballard 1929, Sedgley et al. 2006). Today the species is sold in numerous nurseries around the world as a cut flower and potted plant.

#### Etymology

The specific epithet *provincialis* relates to the description from cultivated specimens grown in France from the Provence Region.

#### Common Names

*Wirilda*, *wirrildar*, *swamp wattle*, *water wattle*, *perennial wattle*, *ever flowering wattle*, *ever blooming wattle*, *bold wattle*, *mimosa of four seasons*.

#### Selected specimens examined (ca 200 specimens total).

SOUTH AUSTRALIA: Rocky River, Flinders Chase, C.R. Alcock 10734 (AD); Black Swamp, 2 Mar. 1946, J.M. Black s.n. (AD96728008); Cox’s Scrub, B.C. Crisp 60 (AD; n.v. PERTH); Mylor, N.N. Donner 110 (AD); Kangaroo Island, Church Rd., 2 km W of West End Highway, D.J. Duval & M.K. Jones 52 (AD, CANB, K, STU); Waterfall Gully, H.J. Eichler 14589 (AD; n.v. CANB, P, PRE, NY); Callawonga Creek, 59 F.M. Hilton (AD); Comaun East, D.N. Kraehenbuehl 3142 (AD; n.v. MCT, F); Mount Lofty Range, southern boundary of Kyeema Conservation Park, B.R. Maslin 8354 (AD; n.v. PERTH); Torrens River, 1847, F. Mueller s.n. (left hand side of MEL2082778); Onkaparinga River & Brown Hill Creek, F. Mueller s.n. (MEL2082743); Flinders Chase, M.C. O’Leary 2595 (AD); Boat Harbor Creek, N.M. Smith 3022 (AD); Peters Creek Rd., adjacent to Kuitpo Forest, D. Symon 13716 (AD; n.v. AAU, BRI, F, MO); Yankalilla Creek, R. Taplin 471 (AD); Clarendon, 30 Dec. 1881, J.G.O. Tepper s.n. (top left hand side of AD9692022A); Karatta, near river only, 5 Mar. 1889, J.G.O. Tepper s.n. (AD96920214); Aldgate, D.J.E. Whibley 37 (AD; n.v. B, SI); Finniss R., D.J.E. Whibley 10435 (AD).

VICTORIA: foot of Mt. William along creek, R. Bates 14089. (AD); Grampians, near Silverband Falls, N.N. Donner 1976 (AD); Victoria Ra., L. Haegi 636 (AD, MEL; n.v. CANB, NSW, A, AAU, H, L, SI); Grampians, S.T. Parfett 13 (AD, MEL; n.v. NSW, PERTH); Yarrowee River, 3 km S of Ballarat CBD, V. Stajsic 3407 (AD, MEL; n.v. CANB); Victoria Valley near Halls Gap, Grampians, D.J.E. Whibley 3378 (AD); Banks of Glenelg R. at junction of Moleside Ck, 10 Nov. 1963, J.H. Willis s.n. (MEL1501100).

TASMANIA: Henry Street, edge of Camp Creek, Mar. 2006, M. & G. Batey 1 (AD; n.v. HO, MEL); Distillery Creek, Launceston, P. Hamaford (MEL2081138).

## Doubtful Name

### *Acacia semperflorens* Jacques

Ann. Fl. Pomone 1837–38: 40 (1837); Courtois, Magasin d'horticulture 1: 12 (1833), pro syn. — *A. impressa* Lindl. [= *A. penninervis*]. **Type citation:** "Cultivated in 1830 at the home of M. Boursault": (specimen uncertain).

Later, Jacques (1847) did not include *A. semperflorens* in the *Manuel Des Plantes*, which described the species of *Acacia* in cultivation at that time,

### Typification

In the protologue of *A. semperflorens* Jacques says that he saw the plant growing at the home of M. Boursault in 1830 (near Paris). No type has been located but there is a specimen in the Florence Herbarium (FI, photo seen), which possibly originates from the type plant. This is the lower specimen on Herbarium Webbianum sheet *N055426*, and has the accompanying label; "*Acacia semperflorens* M. Boursault, N. Holl. Temp 5. 1828".

### Identity

Salient characters of the the Boursault specimen are: phyllodes 75–100 mm long, 15–20 mm wide, acute; gland appears to be 10–20 mm above the pulvinus and seems to be connected to the midrib by a fine oblique nerve; inflorescence racemose; heads globular; peduncles 5–7 (?–10) mm long, rather slender, heads about 20 or more flowered (B.R. Maslin, pers. comm.).

While the identity of this specimen is uncertain (fide Maslin 2001c), the combination of the Boursault specimen characters, and most notably, the phyllodes that possess a vein running to the gland, are characters that are not found in *A. retinodes*, *A. provincialis* or *A. uncifolia*. The protologue of *A. semperflorens* describes the branches as "slightly angled" at the apex, while *A. retinodes*, *A. uncifolia* and *A. provincialis* are conspicuously angled at their branch apices.

Courtois (1833) gives the name *A. semperflorens* in synonymy under *A. impressa* Lindl. (= *A. penninervis*), four years before it was published (Maslin 2001c).

The characters described in the protologue of *A. semperflorens* can be found in forms of the species *A. penninervis* or *A. rubida*. While the epithet "sempreflorens" ("ever flowering") is poorly descriptive of these two species, the protologue for *A. semperflorens* indicates that flowering occurs only in "one part of the year". It is the view of the author that *A. semperflorens* is likely to refer to either of these species.

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### References

- Anonymous, (1919). *Acacia. The Gardeners' Chronicle*. Ser. 3, 65. 163.
- Barker, W.R., Barker, R.M., Jessop, J.P. & Vonow, H.P. (Eds.) (2005). *Census of South Australian Vascular Plants*. 5th Edition. *Journal of the Adelaide Botanic Gardens*. Supplement 1. (Botanic Gardens of Adelaide & State Herbarium: Adelaide.)
- Bentham, G. (1855). *Plantae Muellerianae, Mimoseae. Linnaea*. 26: 618.
- Bentham, G. (1864). *Leguminosae. Flora Australiensis*. (L. Reeve: London.), 2: 362–363.
- Bentham, G. (1875). Revision of the Suborder Mimoseae. *Transactions of the Linnean Society*. 30: 468. (London.)
- Berger, A. (1912). *Catalogue of Plants. Hortus Mortolensis*. 5. (West, Newman & Co: London.)
- Black, J.M. (1924). *Leguminosae. Flora of South Australia*. (Government Printer, North Terrace: Adelaide.), 2: 277.
- Black, J.M. (1932). Additions to the Flora of South Australia. No. 30. *Transactions & Proceedings of the Royal Society of South Australia. (as rhetinodes)* 56: 42.
- Black, J.M. (1948). *Flora of South Australia*. Second edn. 2: 411. (Government Printer: Adelaide.)
- Bonney, N. (2003). *What seed is that?* Rev. edn. (Neville Bonney.)
- Boomsma, C.D. (1972). *Native trees of South Australia*. Bulletin No. 19. (South Australia Woods and Forests Department: Adelaide.)
- Briggs, J.D. & Leigh, J.H. (1996). *Rare or threatened Australian Plants*. 1995, rev. edn. (CSIRO:Collingwood.)
- Campbell, A.J. (1921). *Golden Wattle our national floral emblem*. (Osboldstone & Co. Pty. Ltd., Printers and Publishers: Melbourne.)
- Camus, A. (1927). Un nouvel hybride d'Acacia. *Bulletin de la Societe Dendrologique de France*. No. 64.
- CHAH (2006). *Australian Plant Census*. Viewed in September 2006 at <www.anbg.gov.au/chah/apc>.
- Clarke, P.A. (in preparation). *The historical origins of late 20<sup>th</sup> century Aboriginal English in southern Australia*. (South Australian Museum.)
- Costermans, L. (1981). *Native trees and shrubs of south-eastern Australia*. (Rigby Publishers Ltd.)
- Courtois, R.J. (1833). *Magasin d'horticulture*. Liège. 1: 12–13.
- Dashorst, G.R.M. & Jessop, J.P. (1990). *Plants of the Adelaide plains & hills*. (Kangaroo Press Pty. Ltd.)
- Elliot, W.R. & Jones, D.L. (1982). *Encyclopaedia of Australian plants suitable for cultivation*. Vol. 2. (Lothian Publishing Company.)
- Elliot, R. (1984). *A field guide to the Grampians flora*. (Algonia Publications Pty. Ltd.)



- Entwisle, T.J., Maslin, B.R., Cowan, R.S. & Court, A.B. (1996). *Flora of Victoria*. Volume 3. (Eds N.G. Walsh and T.J. Entwisle) (Inkata Press: Melbourne.)
- Fitzpatrick, P. (1991). *Kurna Warra. A selected wordlist from the language of the Kurna People of the Adelaide Plains*. (Aboriginal Heritage Branch. Department of Environment and Planning.)
- Gailbraith, J. (1960). Wirilda — *Acacia rhetinodes*. *Vic. Natural.* 77: 73.
- Huxley, A., Griffiths, M. & Levy, M. (1992). (Eds). *The New Royal Horticultural Society dictionary of gardening*. Volume 1: 16 (The Macmillan Press Ltd: London.)
- Jackson, I. (1988). *The flora of Kangaroo Island, from the sketch books of Ida Jackson*. (Govt. Printer: Adelaide.)
- Jacques, H.A. & Herincq, F. (1847). *Manuel des plantes*. Volume 1 (Paris: Librairie Agricole De Dusacq.)
- Kraehenbuehl, D.N. (1981). Dr H.H. Behr's Two Visits to South Australia in 1844–45 and 1848–49. *J. Adelaide Bot. Gard.* 3(1): 101–123.
- Lynch, J.J. (1993). *Conservation biology and management of 16 threatened Fabaceae species in Tasmania*. Australian National Parks and Wildlife Service Program Project No. 4. (Parks and Wildlife Service: Tasmania & Australian National Parks and Wildlife Service: Canberra.)
- Maslin, B.R. (1995). *Acacia* miscellany 14. Taxonomy of some Western Australian 'Uninerves – Racemosae' species (Leguminosae: Mimosoideae: section *Phyllodineae*). *Nuytsia* 10: 181–203.
- Maslin, B.R., Thomson, L.A.J., McDonald, M.W. & Hamilton-Brown, S. (1998). *Edible wattle seeds of southern Australia. A review of species for use in semi-arid regions*. (CSIRO:Australia.)
- Maslin, B.R. (2001a). *WATTLE Acacias of Australia*. CD-ROM (ABRS / CSIRO Publishing / CALM.)
- Maslin, B.R. (2001b). *Acacia retinodes*. *Flora of Australia*. 11A: 280–283. (Australian Biological Resources Study, Canberra & CSIRO Publishing: Melbourne.)
- Maslin, B.R. (2001c). *Acacia semperflorens*. *Flora of Australia*. 11B: 444. (Australian Biological Resources Study, Canberra & CSIRO Publishing: Melbourne.)
- Maslin, B.R. & McDonald, M.W. (2004). *AcaciaSearch - Evaluation of Acacia as a woody crop option for southern Australia*. (RIRDC: Australia.)
- McCann, I.R. (1994). *The Grampians in flower*. (Victorian National Parks Assoc.)
- Meyer, H.A.C. (1843). *Vocabulary of the language spoken by the Aborigines of South Australia*. (Adelaide: Allen.)
- Mueller, F.J.H. (1859). Contributions ad *Acaciarum Australiae cognationem*. *Journal of the Linnaean Society*. 111. 126. (Taylor & Francis, Fleet Street.)
- Mueller, F.J.H. (1887–88). *Iconography of Australian species of Acacia and cognate genera*. (Government Printer: Melbourne.)
- Polunin, O. (1980). *Flowers of Greece and the Balkans: a field guide*. (Oxford University Press.)
- Prescott, A. (1988). *It's blue with five petals, wildflowers of the Adelaide region*. (Ann Prescott: South Australia.)
- Prescott, A. (1995). *It's blue with five petals. Kangaroo Island field guide. Wildflowers of Kangaroo Island and the Fleurieu Peninsula*. (Ann Prescott: South Australia.)
- Schlechtendal, D.F.L. (1847). Bestimmung und Beschreibung der von Dr. Behr in Südastralien gesammelten Pflanzen. *Linnaea* 20. 664.
- Sedgley, M. & Horlock, F. (2006). *Acacias. Aust. Bushfoods Mag.* 19. (Rural Ind. & Dev. Corp.) Viewed in January 2006 at <www.ausbushfoods.com/>.
- Simmons, M.H. (1988). *Acacias of Australia. Volume 2*. (Viking O'Neil, Penguin Books Australia Ltd: Melbourne.)
- Spencer, R. (2002). *Horticultural flora of south-eastern Australia. Flowering plants. Dicotyledons. Part 2. Volume 3*. (UNSW Press: Sydney.)
- Stapf, O. & Ballard, F. (1929). *Acacia rhetinodes*. 153: t. 9177. *Curtis's Botanical Magazine*. (Clarendon Press.)
- Tame, T. (1992). *Acacias of southeast Australia*. (Kangaroo Press: Kenthurst, Sydney.)
- Taplin, G. (1879). *The folklore, manners, customs, and languages of the South Australian Aborigines*. (Government Printer: Adelaide.) 34, 131.
- Threatened Flora of Tasmania (2006). Viewed in June 2006 at <www.gisparks.tas.gov.au/ThreatenedFloraCD/>.
- World Wide Wattle (2006). Viewed in June 2006 at <www.worldwidewattle.com>.
- Tindale, N.B. (1934–37). *Journal of researches in the south east of South Australia*. 2: AA338/1/33/2. (Manuscript in South Australian Museum Archives: Adelaide.)
- Vilmorin, H. de (1893). Flowers of the French Riviera. *Journal of the Royal Horticultural Society* XVI.
- Wallace, H.R. (Ed) (1986). *The ecology of the forests and woodlands of South Australia*. (South Australian Government Printer: Adelaide.)
- Whibley, D.J.E. (1980). *Acacias of South Australia*. (South Australian Government Printer: Adelaide.)
- Whibley, D.J.E., Jessop, J.P. & Toelken, H.R. (Eds) (1986). *Acacia. Flora of South Australia*. 2: 555–557.
- Whibley, D.J.E., Symon, D.E. (1992). *Acacias of South Australia*. (South Australian Government Printer: Adelaide.)
- Wilkinson, G.B. (1848). *South Australia: Its advantages and its resources*. (London: John Murray.) (Reprinted by South Australian Gov. Printer 1983.)
- Willis, J.H. (1957). Vascular flora of Victoria and South Australia. *Victorian Naturalist*. 73: 149–160.
- Willis, J. H. (1973, as 1972). Mimosaceae. *A handbook to plants In Victoria*. 2: 227. (Melbourne: University Press.)
- Willis, M. (1949). *By their fruits; a life of Ferdinand von Mueller, botanist and explorer*. (Angus & Robertson: Sydney.)